

Notice of Allowability

Application No.

09/843,339

Examiner

Ling-Siu Choi

Applicant(s)

MC.NEIL-WATSON ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE filed 11/09/2006.
2. ☒ The allowed claim(s) is/are 37-45.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 11/09/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

1. The Request filed on November 9, 2006 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on the parent Application No. 10/834,438 is acceptable and a RCE has been established.

2. This Office Action is in response to the Amendment filed June 2, 2006. Claims 1-36 and 46-53 have been canceled and Claims 37-45 are now pending.

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Paul A. Ragusa on August 17, 2006.

4. The application has been amended as follows:

Claim 41, line 3, change "offset value (measured mean velocity particle peak at low frequency minus mean velocity of particle peak at high frequency equals the electro osmotic offset)." to --offset value, wherein measured mean velocity of particle peak at low frequency

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minus mean velocity of particle peak at high frequency equals the electro osmotic offset. --;

Claim 42, line 1, change "1Hz.+-.1Hz" to --1Hz \pm 1Hz--.

Allowable Subject Matter

5. Claims 37-45 are allowed.

6. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: DeRemigis (US 4,097,153), Goetz (US 4,351,709), Bean et al. (US 4,101,220), and Cannon et al. (US 5,245,290 = WO 93/04363).

Summary of claim 37:

A capillary particle electrophoretic mobility distribution determining apparatus comprising	
1	a holder for a <u>capillary cell</u> adapted to contain a dispersion
2	a <u>light source</u>
3	a <u>detector</u> adapted to detect light scattered from a detection zone of the capillary
4	electric field generating electrodes adapted to generate an electric field in the region of the detection zone
5	a controller adapted to control the electric field applied by the electrodes, wherein the controller is adapted to apply an electric field at a first relatively low frequency and at least a second relatively high frequency, <u>the first frequency being low enough that better velocity distribution resolution is achieved than could be achieved at the second frequency and</u> <u>the second frequency being high enough that the measured velocity distribution is</u>

	<u>substantially unaffected by electro-osmotic flow</u>
6	a signal processor adapted to process the signals detected in use by the detector to determine a velocity mobility distribution, wherein the processor is adapted in use to modify the particle velocity distribution spectrum obtained at the first frequency by <u>shifting it by an offset amount to remove the electro-osmotic velocity</u> , the offset amount being determined using information from measurements at both the first and second frequencies of field reversal

DeRemigis discloses an apparatus to measure the electrophoretic mobility of particles suspended in a fluid medium, wherein the particles in a fluid medium are subjected to an electric field alternating between a first and second intensity under a coherent electromagnetic radiation to produce scattered radiation, the coherent radiation and the scattered radiation being directed to a detector to produce a spectrum of heterodyne signal in which the spectral composition with the first intensity of applied electric field is compared with the spectral composition obtained with the second intensity of applied electric field to provide a measurement of the electrophoretic mobility of the suspended particles (abstract; claim 1). However, DeRemigis does not teach or fairly suggest a capillary particle electrophoretic mobility distribution determining apparatus comprising using two specifically different frequencies to remove the electro-osmotic velocity on a capillary cell and obtaining the electrophoretic mobility of particles.

Goetz discloses an apparatus to measure a velocity of a particle moving parallel to a predetermined axis, the measurement steps comprising (a) illuminating the moving particle, (b) modulating light reflected from the moving particle as a function of a predetermined frequency, and (c) deriving a signal having a frequency component displaced with respect to the

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predetermined frequency, the frequency component being related to the velocity of the moving particle and to the direction of the movement relative to the axis (claim 1). However, Goetz does not teach or fairly suggest a capillary particle electrophoretic mobility distribution determining apparatus comprising using two specifically different frequencies to remove the electro-osmotic velocity on a capillary cell and obtaining the electrophoretic mobility of particles.

Bean et al. disclose an apparatus for measuring electrophoretic mobility distribution of particles suspended in a fluid and situated in a square wave electric field by heterodyning laser light of a predetermined unshifted frequency with the laser light after undergoing a Doppler shift in frequency caused by the particles scattering laser light impinging thereon so as to produce a signal representative of the Doppler shift in frequency, wherein the electric field square wave frequency is varied in a predetermined manner. However, Bean et al. do not teach or fairly suggest a capillary particle electrophoretic mobility distribution determining apparatus comprising using two specifically different frequencies to remove the electro-osmotic velocity on a capillary cell and obtaining the electrophoretic mobility of particles.

Cannon et al. disclose an apparatus for determining the particle charge and size distribution of particles in suspensions, comprising at least two spaced apart electrodes in contact with a portion of the suspension; means for generating one of two electroacoustic effects at a minimum of two different frequencies; means for measuring the resulting electroacoustic effect, and means for measuring the acoustic properties of the suspension required for the determination of particle size and charge from the measured electroacoustic signal (claim 1). However, Cannon et al. do not teach or fairly suggest a capillary particle electrophoretic mobility distribution determining apparatus comprising using two specifically different frequencies to remove the

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electro-osmotic velocity on a capillary cell and obtaining the electrophoretic mobility of particles.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

January 3, 2007